In the claims:

1. **(currently amended)** A method of preparing a fibrous protein smectic hydrogel, comprising:

   a. [[pouring]] contacting an aqueous fibrous protein solution [[into a container comprising]] with a solvent that is not miscible with water;

   b. [[sealing the container and]] allowing [[it]] the solution in contact with the solvent to age at about room temperature or under conditions preventing evaporation or both; and

   c. collecting the resulting fibrous protein smectic hydrogel; and optionally allowing [[it]] the hydrogel to dry.

2. **(original)** The method of claim 1, wherein the solvent is chloroform.

3. **(original)** The method of claim 1, wherein the solvent is iso-amyl alcohol.

4. **(original)** The method of claim 1, wherein the solvent is hexane.

5. **(original)** The method of claim 1, wherein the fibrous protein is selected from the group consisting of silk, collagens, keratins, actins, chorions, and seroins.

6. **(original)** The method of claim 1, wherein the fibrous protein is silk.

7. **(original)** The method of claim 1, wherein the fibrous protein solution is present in greater than about 4% by weight.

8. **(original)** The method of claim 1, wherein the fibrous protein solution is present in greater than or equal to about 8% by weight.

9. **(original)** The method of claim 1, wherein the fibrous protein solution is present in greater than about 4% by weight, the fibrous protein is silk, and the solvent is iso-amyl alcohol.

10. **(original)** The method of claim 1, wherein the fibrous protein solution is present in greater than or equal to about 8% by weight, the fibrous protein is silk, and the solvent is iso-amyl alcohol.

11. **(original)** The method of claim 1, wherein the fibrous protein solution is present in greater than about 4% by weight, the fibrous protein is silk, and the solvent is chloroform.

12. **(original)** The method of claim 1, wherein the fibrous protein solution is present in greater than or equal to about 8% by weight, the fibrous protein is silk, and the solvent is chloroform.

13. **(original)** The method of claim 1, wherein the fibrous protein solution is present in greater than about 4% by weight, the fibrous protein is silk, and the solvent is hexane.

14. **(original)** The method of claim 1, wherein the fibrous protein solution is present in greater than or equal to about 8% by weight, the fibrous protein is silk, and the solvent is hexane.

15. **(original)** The method of claim 1, wherein the smectic hydrogel is a bulk solid hydrogel comprising several ordered layers of the fibrous protein.

16. **(currently amended)** A method of obtaining predominantly one enantiomer from a [[racemic]] mixture <u>of enantiomers</u>, comprising the steps of:

a. [[pouring]] <u>contacting</u> an aqueous fibrous protein solution [[into a container comprising]] <u>with</u> a solvent that is not miscible with water;

b. [[sealing the container and]] allowing [[it]] <u>the solution in contact with the solvent</u> to age at about room temperature <u>or under conditions preventing evaporation or both</u>;

c. allowing the enantiomers of the [[racemic]] mixture to diffuse selectively into the <u>resulting fibrous protein</u> smectic hydrogel in solution;

d. removing the smectic hydrogel from the solution;

e. rinsing predominantly [[one]] <u>a first</u> enantiomer from the surface of the smectic hydrogel; and

f. extracting predominantly [[one]] a second enantiomer from the interior of the smectic hydrogel.

17. **(original)** The method of claim 16, wherein the fibrous protein is selected from the group consisting of silk, collagens, keratins, actins, chorions, and seroins.

18. **(original)** The method of claim 16, wherein the fibrous protein is silk.

19. **(original)** The method of claim 16, wherein the fibrous protein solution is present in greater than about 4% by weight.

20. **(original)** The method of claim 16, wherein the fibrous protein solution is present in greater than or equal to about 8% by weight.

21. **(original)** The method of claim 16, wherein the fibrous protein solution is present in greater than about 4% by weight and the fibrous protein is silk.

22. **(original)** The method of claim 16, wherein the fibrous protein solution is present in greater than or equal to about 8% by weight and the fibrous protein is silk.

23. **(original)** The method of claim 16, wherein the smectic hydrogel is a bulk solid hydrogel comprising several ordered layers of the fibrous protein.

24. **(original)** A fibrous protein smectic hydrogel prepared according to the method of claim 1.

25. **(original)** The fibrous protein smectic hydrogel of claim 24, wherein the fibrous protein is selected from the group consisting of silk, collagens, keratins, actins, chorions, and seroins.

26. **(original)** The fibrous protein smectic hydrogel of claim 24, wherein the fibrous protein is silk.

27. **(original)** The fibrous protein smectic hydrogel of claim 24, wherein the fibrous protein smectic hydrogel is greater than or equal to about 38 nm thick.

28. **(original)** The fibrous protein smectic hydrogel of claim 25, wherein the fibrous protein smectic hydrogel is greater than or equal to about 38 nm thick.

29. **(original)** The fibrous protein smectic hydrogel of claim 26, wherein the fibrous protein smectic hydrogel is greater than or equal to about 38 nm thick.

30. **(original)** The fibrous protein smectic hydrogel of claim 24, wherein the fibrous protein smectic hydrogel is a bulk solid comprising several ordered layers of the fibrous protein.

31. **(new)** A chiral composition comprising a liquid crystalline ordered solid having a nanoscale multilayered structure, wherein each layer comprises a molecularly oriented fibrous protein, and wherein the layers define an interlayer region having nanoscale chiral pores or channels.

32. **(new)** The composition of claim 31, wherein the solid is a hydrogel.

33. **(new)** The composition of claim 31, wherein the liquid crystalline ordering comprises a smectic phase.

34. **(new)** The composition of claim 31, wherein the liquid crystalline ordering comprises a chiral smectic phase.

35. **(new)** The composition of claim 31, wherein the liquid crystalline ordering comprises a chiral liquid crystalline phase.

36. **(new)** The composition of claim 31, wherein the fibrous protein is selected from the group consisting of silk, collagens, keratins, actins, chorions, and serions.

37. **(new)** The composition of claim 36, wherein the fibrous protein is silk.

38. **(new)** The composition of claim 31, wherein the liquid crystalline order persists to macroscopic length scales on the order of millimeters or centimeters.

39. **(new)** The composition of claim 31, wherein the fibrous protein includes endblocks that promote localization of a solute molecule added to the composition to the interlayer region.

40. **(new)** The composition of claim 31, further comprising an enzyme incorporated into the chiral composition.

41. **(new)** The composition of claim 31, further comprising a catalyst incorporated into the chiral composition.

42. **(new)** A method of obtaining predominantly one enantiomer from a mixture of enantiomers of a chiral molecule, the method comprising:

a) contacting the mixture of enantiomers with a chiral composition comprising a liquid crystalline ordered solid having a nanoscale multilayered structure, wherein each layer comprises a molecularly oriented fibrous protein, and wherein the layers define an interlayer region having nanoscale chiral pores or channels; and

b) isolating predominantly one enantiomer within the chiral composition.

43. **(new)** The method of claim 42, further comprising extracting the enantiomer isolated within the chiral composition.

44. **(new)** The method of claim 42, wherein contacting the mixture of enantiomers with the chiral composition comprises allowing the enantiomers to diffuse selectively into the chiral composition in solution.

45. **(new)** The method of claim 44, further comprising removing the chiral composition from the solution and rinsing predominantly another enantiomer from the surface of the chiral composition.

46. **(new)** The method of claim 42, wherein the mixture of enantiomers is contacted with a membrane including the chiral composition, and wherein predominantly one enantiomer is isolated within the membrane and predominantly another enantiomer is allowed to pass through the membrane.

47. **(new)** An isolated silk protein oriented to provide chiral surfaces capable of use as a chiral selector in a chiral separation.

48. **(new)** The use of an isolated silk protein as a chiral selector in a chiral separation.